

BENCHMARKS

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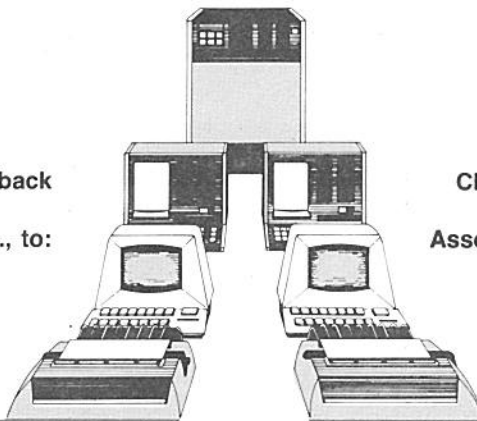
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BENCHMARKS Reader/User feedback is encouraged.

Send all letters, suggestions, etc., to:
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SERVICES AVAILABLE TO USERS OF THE NTSU COMPUTING FACILITIES

The NTSU Computing Center is located in the Information Sciences Bldg., Room 119. **Phone Numbers:** Computing Center: (817) 565-2324; Help Desk: 565-4050. Graphics Lab: 565-3479

BENCHMARKS QUESTIONS/CONTRIBUTIONS, ETC. - Claudia Lynch

INFORMATION & ID CODES; DISK SPACE PROBLEMS - Carolyn Goodman

PRE-RESEARCH COUNSELING; STATISTICAL/RESEARCH SUPPORT - George Morrow, Scott Barber, Claudia Lynch, Tim King, Panu Sittiwong

ACADEMIC ADABAS/COM-PLETE; CRSP & COMPUSTAT PROBLEMS - Telka Clem

STUDENT PROGRAMMING PROBLEMS - CSCI Dept., GAB Room 542A; BCIS Dept., BA Room 152

JCL PROBLEMS; PASSWORD & OPERATING SYSTEM PROBLEMS; COMMUNICATION/TERMINAL PROBLEMS - Help Desk

DATA ENTRY & KEYPUNCH; TEST SCORING & ANALYSIS - Betty Grise

ADMINISTRATIVE APPLICATIONS - Coy Hoggard

PRINTOUT RETRIEVAL - RJE Operators

DIALING UP NTSU COMPUTERS OVER THE TELEPHONE

Phone numbers for the Local Area Network (LAN) are:

300 BAUD: (817) 565 - 3300
1200 BAUD: 565 - 3499
300 BAUD: D/FW METRO 429 - 6006

After a communications link has been successfully established, the user will receive the # prompt. At this point, it will be necessary to issue the appropriate CALL command to connect with a computer.

The numbers that will accept either 300 or 1200 baud communications (connected to modems with an autobaud feature) are currently out of order. Watch MUSIC/SP News and *Benchmarks* for information concerning their availability.

CALL 8040 will connect with the 8083 (will not support 8050 full-screen editing).
8060

CALL 3270 will connect with the NAS/8083 through the 3270 3280 protocol converter (supports full-screen editing).

CALL DEC will connect with the VAX Cluster
CALL 780 will connect with the Research VAX

CALL 2000 will connect with the HP-2000

NTSU CABLE SYSTEM SCHEDULE

The current configuration of the NTSU cable system is as follows:
Channel 7 — NT Daily. Broadcast originates from the NTSU Journalism Department.

Channel 8 — Tager microwave channel. Carries broadcasts to and from NTSU to other links in the Tager network.

Channel 10 — NTSU Computer System Status Monitor (SSM). Displays the current status of the NAS, VAX and HP computer systems supported by the Computing Center.

Channel 12 — Sammons Cable. Currently broadcasts Cable News Network (CNN), unless a special program is requested.

Special broadcasts to and from classrooms (on channel 11), etcetera can be arranged by contacting the Media Library (565-2484).

HOURS FOR NTSU COMPUTER ACCESS AREAS: FALL 1986*

<u>Days</u>	<u>Times</u>	<u>Location</u>
Sunday	2-10 p.m. Noon-Midnight	ISB 110 Terminal Area Computing Center RJE
Saturday, Sunday	2-11 p.m. Noon-11:45 p.m. Noon-5 p.m.	GAB 550C College of Business Graphics Lab
Monday	7:00 a.m.-Midnight	Computing Center RJE
Tuesday-Saturday	7:00 a.m.-Open 24 hrs/day	Computing Center RJE
Monday-Thursday	7:30 a.m.-Midnight 8:15 a.m.-11:45 p.m. 8 a.m.-Midnight 8 a.m.-10 p.m.	ISB 110 Terminal Area College of Business GAB 550C Graphics Lab
Friday	7:30 a.m.-6 p.m. 8:15 a.m.-7:45 p.m. 8 a.m.-8 p.m. 8 a.m.-6 p.m.	ISB 110 Terminal Area College of Business GAB 550C Graphics Lab
Saturday	9 a.m.-6 p.m. CLOSE Midnight 10 a.m.-8 p.m.	ISB 110 Terminal Area Computing Center RJE GAB 550C

*Hours on finals days and holidays may vary. Check MUSIC/VAX News and/or posted schedules for exceptions.

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 * NEW POLICIES,
 * PROCEDURES,
 * AND OTHER
 * IMPORTANT
 * STUFF
 *

Computing Services at NTSU: the Year in Retrospect

By Richard A. Harris Jr., Associate Vice President for Computing

The following is taken from an article about NTSU that will appear in the Denton Record Chronicle.

During the past twelve months there have been many exciting developments in computing at North Texas State University, including an agreement to share central computing equipment with the Texas College of Osteopathic Medicine (TCOM), the installation of a computer graphics laboratory, an upgrade of the VAX computers, and a major upgrade of the IBM-compatible mainframe computers.

In November, 1985, TCOM established an agreement to share central computing resources with North Texas State University, and the NTSU Associate Vice President for Computing was assigned responsibility for TCOM computing. This agreement was based on the recognition that joint solutions of several pressing problems at both NTSU and TCOM would result in significantly better computer-related support at both institutions. The key concept of this agreement is to provide access to equivalent computing services at both institutions for a fixed annual cost.

A uniquely cost effective central computer upgrade plan was approved locally and by the state Automated Information and Telecommunications Council and was implemented prior to summer registration to provide NTSU and TCOM adequate mainframe computing resources.

A high-speed data communications network will be installed at TCOM, in Fort Worth, and connected with the NTSU data communications network.

Staffing plans were also approved and have been implemented to provide TCOM technical management, analysis and programming support for fiscal systems, consultation for research and instructional computing, and related communications activities.

A new joint NTSU/TCOM Human Resources Management Information System (HRMIS) is now being developed in-house, with payroll, personnel, and position control components tentatively scheduled for implementation in September, 1987.

The Computer Graphics Laboratory was opened in January of 1986. It is located in the basement of the Information Science Building and provides students and faculty with computer graphics tools for research and teaching. Twenty computer workstations are available for computer aided design and drafting, and ten terminals access computer graphics programs on our large central computers. A digital drafting plotter and three printers, one of them a color ink-jet printer, allow graphics programmers to reproduce their designs on paper. The Lab is used by students taking courses in the Art, Computer Sciences, and Industrial Technology Departments, by graduate students in the College of Education, and by faculty members from the Mathematics and Physics Departments and the College of Business.

In January, two of the Digital Equipment Corporation VAX computers were upgraded, increasing their processing speed by fifty per cent. These machines were also put into a cluster configuration, which allows two computers to share the same data and programs. The cluster provides efficient administration of multiple VAX computers, and insures that programs and data are available even if one of the computers fails.

In May, the NAS/8040 computer was upgraded to a National Advanced Systems AS/8083 dual processor computer. This computer contains two central processing units which are operated independently. One processor is dedicated to instruction and research support, while the other is used to process administrative programs for NTSU and TCOM. This upgrade increased the IBM-compatible instruction and research computing capacity by 80 percent, and administrative computing capacity by over 200 percent.

Enhancements are continuing on the Student Information Management System (SIMS) which was installed last year. This system is responsible for on-line registration, student billing, financial aid management, and student records management, along with other administrative functions.

NTSU continues to offer a wide range of computing facilities to the academic community at NTSU and TCOM, both locally and through the University's memberships in such organizations as EDUNET, an educational computer network, and BITNET, an inter-university computer network for exchanging electronic mail and documents. Major programming languages, statistical and research software, archives of machine-readable research data, computer based training, and electronic mail facilities are available to the academic community. Other computing services provided by the Computing Center include data entry, word processing, and computerized test scoring. Please contact the Computing Center [565-2324] for further information on any of the facilities mentioned in this article.

All Academic ID-Codes Expire August 31

By Carolyn Goodman, Administrative Assistant for Computer Services (AA03@NTSMUSIC)

Academic User ID-Codes are assigned and valid for the period September 1 through August 31 of the following year. Therefore, all current User ID-Codes - ON ALL SYSTEMS - will be expiring August 31, 1986.

If you wish your ID-Code to be valid and active after September 1, 1986, it is necessary to complete the ID-Code Request Form "Renewal FY87."

If you have any questions regarding ID-Code renewal procedures, please feel free to contact me at the Computing Center (565-2324, ISB 119).

Computing Center Fall Short Courses

The Computing Center is offering the following short courses for the Fall semester. Please pre-register to attend. Only 20 people will be admitted per section. Courses marked with an * require knowledge of the MUSIC Context Editor. THE COMPUTING CENTER RESERVES THE RIGHT TO CANCEL COURSES WITH LESS THAN 5 PEOPLE SIGNED UP.

1. Six separate 2-hour introductory sessions on the MUSIC/SP interactive operating system, using the 3270 Protocol Converter to do FULL-SCREEN EDITING ON MUSIC/SP. To be held in Room 110 of the Science Library (ISB).

Monday, September 15	: 1-3 p.m.	Instructor: Janice Green
Tuesday, September 16	: 6-8 p.m.	Instructor: Tim King
Saturday, September 20	: 9-11 a.m.	Instructor: Janice Green
Saturday, October 18	: 9-11 a.m.	Instructor: Janice Green
Wednesday, October 22	: 6-8 p.m.	Instructor: Tim King
Thursday, October 23	: 1-3 p.m.	Instructor: Telka Clem
2. Two separate two-hour sessions on system files in SAS and SPSS-X. To be held in the Graphics Lab (ISB):

Wednesday, September 24	: 3-5 p.m.	Instructor: Scott Barber
Monday, October 27	: 9-11 a.m.	Instructor: Scott Barber
3. Two separate three-hour sessions on VAX Utilities & Commands. To be held in Room 110 of the Science Library (ISB).

Tuesday, September 16	: 9 a.m. - Noon	Instructor: Ron Brashear
Monday, October 20	: 6-9 p.m.	Instructor: Ron Brashear
4. Two separate two-hour introductory session on SAS.* To be held in Room 110 of the Science Library (ISB).

Wednesday, September 17	: 2-4 p.m.	Instructor: Panu Sittiwong
Monday, October 20	: 1-3 p.m.	Instructor: Tim King
5. Two separate two-hour sessions on using MUSIC/SP Utilities.* To be held in Room 110 of the Science Library (ISB).

Thursday, September 25	: 3-5 p.m.	Instructor: Janice Green
Saturday, October 25	: 9-11 a.m.	Instructor: Janice Green
6. Two separate two-hour introductory sessions on SPSS-X.* To be held in Room 110 of the Science Library (ISB).

Tuesday, September 23	: 1-3 p.m.	Instructor: Panu Sittiwong
Wednesday, October 29	: 9-11 a.m.	Instructor: Tim King
7. Two separate two-hour introductory sessions on IBM JCL.* To be held in the Graphics Lab (ISB).

Thursday, September 25	: 3-5 p.m.	Instructor: George Morrow
Tuesday, October 28	: 9-11 a.m.	Instructor: George Morrow
8. Two separate two-hour introductory sessions on CMS (for use with SAS/GRAPH). To be held in Room 110 of the Science Library (ISB). **LIMITED TO FACULTY AND GRADUATE STUDENTS - MUST HAVE A CMS ID-CODE.**

Friday, September 19	: 1-3 p.m.	Instructor: Mansur Hasib
Friday, October 24	: 1-3 p.m.	Instructor: Mansur Hasib
9. Two separate two-hour introductory sessions on using SAS/GRAPH. To be held in the Graphics Lab (ISB). [Must be familiar with CMS to attend - see #8 above].

Monday, September 22	: 1-3 p.m.	Instructor: Mansur Hasib
Monday, October 27	: 1-3 p.m.	Instructor: Mansur Hasib

Computing Center Open House

Each semester the Computing Center hosts an open house to give users an opportunity to tour the Computing Center facilities. Tours for the Fall semester will be offered on September 17 & 18 (Wednesday and Thursday) from 9 a.m. until 7 p.m.. Reservations must be made through the Computing Center prior to the tours. Phone 565-2324 to make reservations. Tours will not be offered at any other time during the semester.

MUSIC/SP Help Files Revamped

The MUSIC/SP Help files have a new look. Enter **HELP TOPICS** while logged on to MUSIC and see what new and HELPful files are out there for your perusal.

Assembler H Available For Testing on NAS/8083

By Lee Anne Smith, Technical Support Group (SY10@NTSMUSIC)

Assembler H version 2.0 is now available for testing on the Academic portion of the NAS/8083. It will be available on the Administrative CPU by the end of the summer. Some noteworthy features of the product include:

- * Assembler language compatibility
- * High speed assembly
- * Macro coding flexibility

The following is a summary of information in the *Assembler H Version 2: General Information* manual, Dec. 1981:

Language Compatibility — The Assembler H language is "functionally compatible" with VS Assembler in that programs written for VS Assembler and successfully assembled without warning or diagnostic messages will be assembled correctly by Assembler H.

High Speed Assembly — The assembly process performed by "H" is faster than that of the VS Assembler due to:

- (1) Text processing for the assembly is performed in virtual storage if the allocated region space is sufficiently large. (IBM's distributed versions of the procs have REGION=200K.) Within the region, the amount of space actually in use may expand dynamically to accommodate a given operation. The processed text is buffered into work block areas within the region until these can be written out to the SYSUT1 file. Work block areas are re-used upon demand.
- (2) Assembler H is a two-pass assembler. The first pass performs editing of the source and builds the initial version of the symbol table, using what IBM calls "lookahead" mode, scanning to the end of the source to resolve symbols. The second pass of the assembly process completes the symbol table. (VS Assembler used several passes over the source).

Macro Coding Flexibility — Coding rules (especially those pertaining to macros) have been relaxed in Assembler H. For example, (1) macros may be redefined within the same program, (2) macros may be nested. The macro definition may appear anywhere in the source (as long as it is encountered before the macro is invoked).

Assembler H will be available in a test mode until early September when it will replace the current VS Assembler as the "default" assembler obtained when one of the NTSU standard catalogued procedures is executed. For testing purposes, the following catalogued procedures are available:

<u>Proc Name</u>	<u>Function</u>
ASMTCL	Assemble
ASMTCL	Assemble and Link-edit
ASMTCLG	Assemble and execute
ASMTCLG	Assemble, Link-edit and execute

TCOM Gets Academic Computing Coordinator

Mansur Hasib (AC36@NTSMUSIC) became the Academic Computing Consultant for TCOM in June. Mansur comes to us from Emory University where he is a Ph.D. candidate in Political Science. He was also a statistical software consultant for the Emory University Computing Center and a research consultant for the Professional Standards Commission of the State of Georgia. An avid bridge player, Mansur and his wife Najma managed to find a bridge club and participate in the world-wide tournament after being in Fort Worth only a few weeks.

Madron Presents Seminar

Tom Madron, Manager of Computer Services (AS00@NTSMUSIC), attended the annual association of Systems Management Conference in New Orleans this past May. Dr. Madron presented a seminar entitled "Loosening the Tie: Local Area Networks," which addressed analyzing requirements, determining available features and selecting a vendor for telecommunications equipment.

Just in Case You Forgot: Computing Center Policy and Procedure Highlights

● PROCEDURE FOR OBTAINING USER ID-CODES FOR CLASSROOM INSTRUCTION

When applying for ID-codes for classroom use, we ask that faculty fill out *two* forms for *each class* for which they need computer user ID-codes. The first form, called the "NTSU Computing Center User-ID Request Form," is used in assigning all computer ID-codes at the University. The information on this form is entered into a computer database by our clerical staff. This database forms the input for a program which automatically assigns ID-codes and passwords on all of our computer systems. It is critical, therefore, that this form be filled out accurately and completely.

In addition to the faculty member's name and Social Security Number, there are several other important items on the Request Form. Instructors should indicate they are requesting Classroom user IDs, and specify the course information with department, course and *section*. Failure to provide this information will slow down the processing procedures.

The form also contains a space to indicate the number of students in the class. If this area is left blank, our program will assign user ID-codes to *all* students registered for that class. Each ID-code will be matched with the name of a student in the class as contained in the University student records database. At the beginning of each new semester, therefore, it would be wise to wait until most add/drops have been completed before requesting computer user ID-codes for classes. To reiterate, normally the space for number of students should be left blank.

The ID-codes will be composed of two letters and two digits. The two digits will start with 00, then 01, 02, etc. until the number is equal to the number of students in the class. The ID-code numbered 00 is in the instructor's name, and each of the other codes is assigned to a student by name. Slips containing the ID-codes, passwords and names should be picked up by the instructor at the Computing Center Reception Area, located in the Information Science Building, Room 119.

If additional students are added to the class, the instructor need only call Sharon or Carolyn in the Computing Center, Ext. 2324, letting them know the last number in the original range assigned. The required number will then be added, and may be picked up shortly thereafter in the Computing Center. Likewise, instructors may cancel the ID-codes of students who drop the class by providing the student names and ID-codes in a written memo.

Under some circumstances, instructors may prefer that ID-codes not be assigned to each student by name. This may occur, for example, when students will be working only as teams, or when codes are needed before the class rolls are determined. Only in cases like these should instructors indicate the number of ID-codes required for the class. All these codes will be assigned in the instructor's name, and will range from 00 to the number requested. Once again, the 00 ID-code should only be used by the instructor.

Instructors should indicate on the Request Form the computers and operating systems required for the class. The MUSIC/SP system is required to access almost all software on the IBM compatible mainframe NAS/8083 computer, including those programs that run only under the OS batch operating system.

Normally, then, classes that use the IBM compatible system will require *both* MUSIC and OS batch ID-codes. Classes which use the VAX computers will also be assigned OS batch ID-codes, so that students may use the central printers in the ISB. No class ID-codes will be assigned on the administrative computer under any circumstances. Classes which require access to the CMS operating system, or the COM-LETE teleprocessing monitor on the NAS/8083, must first have the approval of the manager of Academic Computing Services.

Faculty should also fill in the departmental account number and department name. This information allows us to collect data on computer usage by department and college which is useful in planning for future computer and software purchases.

The Request Form is not complete until it has been signed by both the faculty member and the department head. These signatures certify that the computing services requested are in support of NTSU activities, and will not be used for commercial purposes or personal financial gain.

When requesting classroom accounts, a Classroom ID Usage Projection form must also be completed. The information provided on this form fulfills two purposes. First, information on course enrollment, number of ID-codes, systems and software usage aids the Computing Center in planning for future computer and software purchases. Second, the form collects information on other special facilities provided by Academic Computing, such as terminal rooms, the Graphics Lab, and short courses, which the class may require.

● THE RESPONSIBILITIES OF COMPUTER USE

Like most of life's other privileges, the privilege of being a computer user at NTSU brings with it some responsibilities. These responsibilities involve two common things: courtesy and sense.

Every computer user must comply with the following statement, which is signed by individual ID-code holders and Instructors who apply for classroom ID-codes. It is the Instructor's responsibility to inform their students about this when they pass out the ID-codes.

I hereby certify that to the best of my knowledge and intent, the computing services obtained through the use of this request form:

1. Will be limited to justifiable computing support of NTSU/TCOM activities;
2. Will not be used for commercial purposes or personal financial gain.

I understand that unauthorized use of other userids or attempts to gain access to another user's programs or data files will result in loss of computing privileges and possible disciplinary or legal action.

This means, among other things, is that people who have classroom ID-codes, cannot use them for non-classroom work. Recently, there have been several instances of student violations with regard to the use of classroom ID-codes. These violations have included such things as using the computer to perform tasks in connection with an off-campus job, and using the laser printer to produce resumes. BE FOREWARNED ... For a student, loss of computing privileges, *which could happen* when you do such things, could make it impossible to complete classroom assignments, or even an entire degree program. Furthermore, abuse of computing resources could result in the restriction of computing services *for the entire academic community*.

See related topic below . . .

● COMPUTER CRIME AND YOU: KNOW THE LAW

The Texas State Legislature amended Title 7 of the Penal Code, effective September 1, 1985 to include computer crimes. After providing definitions for such terms as 'communications common carrier,' 'computer,' 'computer program,' 'computer security system,' 'data,' and 'electric utility,' Senate Bill 72 goes on to state:

"Section 33.02. BREACH OF COMPUTER SECURITY.

(a) A person commits an offense if the person:

"(1) uses a computer without the effective consent of the owner of the computer or a person authorized to license access to the computer and the actor knows that there exists a computer security system intended to prevent him from making that use of the computer; or

"(2) gains access to data stored or maintained by a computer without the effective consent of the owner or licensee of the data and the actor knows that there exists a computer security system intended to prevent him from gaining access to that data.

"(b) A person commits an offense if the person intentionally or knowingly gives a password, identifying code, personal identification number, or other confidential information about a computer security system to another person without the effective consent of the person employing the computer security system to restrict the use of a computer or to restrict access to data stored or maintained by a computer.

"(c) An offense under this section is a Class A misdemeanor.

"Section 33.03. HARMFUL ACCESS.

(a) A person commits an offense if the person intentionally or knowingly:

"(1) causes a computer to malfunction or interrupts the operation of a computer without the effective consent of the owner of the computer or a person authorized to license access to the computer; or

"(2) alters, damages, or destroys data or a computer program stored, maintained, or produced by a computer, without the effective consent of the owner or licensee of the data or computer program.

"(b) An offense under this section is:

"(1) a Class B misdemeanor if the conduct did not cause any loss or damage or if the value of the loss or damage caused by the conduct is less than \$200;

"(2) a Class A misdemeanor if the value of the loss or damage caused by the conduct is \$200 or more but less than \$2,500; or

"(3) a felony of the third degree if the value of the loss or damage caused by the conduct is \$2,500 or more.

"Section 33.04. DEFENSES. It is an affirmative defense to prosecution under Sections 33.02 and 33.03 of this code that the actor was an officer, employee, or agent of a communications common carrier or electric utility and committed the proscribed act or acts in the course of employment while engaged in an activity that is a necessary incident to the rendition of service or to the protection of the rights or property of the communications common carrier or electric utility.

● CONSULTING ON PIRATED SOFTWARE

It is the policy of the Computing Center that no consulting will be done with users on microcomputer software that we know or have reason to believe is pirated. "Pirated" means that the software is being used in violation of the license agreement with the company that produced the software. So ... if you copy someone else's software and can't run it on your micro, don't come to us.

● AFTER-HOURS OUTPUT RETRIEVAL FOR STUDENTS IN WHEELCHAIRS

The following procedure is to assist students in wheelchairs to obtain output printed on the Laser or Remote 3 printers after regular office hours.

During regular office hours (8 am - 5 pm, Monday through Friday), students in wheelchairs may enter through the Computing Center front office (Rm 119 ISB) and go through the hallway around to the Output boxes to retrieve their output.

After 5 pm on weekdays and at all times on weekends, this office is closed. At these times, follow the steps below.

1. ON MUSIC using REMOTE 3: Jobs routed to this Remote have been printed when OSJR responds "JOB NOT FOUND". Proceed to '3' below.
2. ON MUSIC using LASER: Wait about 45 minutes after OSJR responds "JOB NOT FOUND", then call 3890 to see if your job has printed.
 ON VAX using LASER: Wait about 50 minutes after submitting your job with the LASER command, then call the Output Operator at 3890 to see if your job has printed.
3. When your job has printed, tell the Output Operator (at 3890)
 - A. Your name,
 - B. How many jobs you'll be picking up,
 - C. Filing type specified on the output,
 - D. That you're on your way over to pick up the output.
4. Come over to the ISB main entrance. Buzz the key-operated buzzer* by the far right door, and come into the hallway by the door to ISB room 119.

The Output Operator on duty will have retrieved your printouts after your phone call. (S)he will listen for the buzzer as a signal to bring the printouts to you at the door of rm. 119, as soon as he is able to do so.

TO OBTAIN A KEY TO THE BUZZER: See Handicapped Student Services, in the Dean of Students Office.

● JOB PROCESSING POLICY REMINDER

Every semester brings with it new faculty and students and returning faculty and students who have had plenty of things to think about between semesters besides what the Computing Center job processing policies are. It is for this reason that it is probably a good idea to review some of the "biggies," as far as rules go ...

- 1) One of the most important rules is the 4 COPY RULE. That is, the maximum number of copies of a job to be printed on *any Computing Center printer* is 4. Exceptions to this policy must be approved by the Director of Computer Systems or his authorized representative. VIOLATIONS WILL BE REPORTED TO THE APPROPRIATE VICE PRESIDENT. This rule should be taken very seriously.
- 2) Jobs with identical job names waiting to execute will be canceled.
- 3) No more than 5 jobs can be submitted to the execution queue by the same person at one time. Additional jobs will be canceled unless special permission has been obtained and Computer Operations has been notified. Permission may be gained by contacting Academic Computing Services (ISB 119, 8-5 M-F).
- 4) Jobs can have different classes, and if you misclassify your job it may be canceled. Following is the job class schedule.

CLASS:	TIME/LINES RESTRICTIONS:	# OF TAPES:
A	3*TIME + (LINES/1000) <= 45	NONE
B	3*TIME + (LINES/1000) <= 45	ONE
C	3*TIME + (LINES/1000) <= 45	THREE
D	3*TIME + (LINES/1000) <= 45	TWO
J,K,N	3*TIME + (LINES/1000) > 45	< THREE
M	3*TIME + (LINES/1000) > 45	THREE

BATCH CLASSES (TIME + LINES $\leq$ 4) (NO TAPES):

CLASS:	COMPILER:
1	PLC
2	WATFIV
3	SPITBOL
4	WATBOL
5	WATFIV-S

NOTE: Class J,K,L,M, or N jobs must have a special handling notice submitted to the operators via 'SURF' stating time, lines, and number of devices (tapes) required before the jobs will be processed. Enter HELP SURF while in *GO mode on MUSIC for more information.

Class L is reserved for JOBS requiring over one megabyte (1024K). Permission to run such jobs must be obtained from Academic Computing Services (ISB 119, 8-5 M-F).

More information about Computing Center JOB processing policies can be obtained by entering **HELP OPER** from *GO mode on MUSIC.

• DATASET NAMING CONVENTION

The naming convention for OS disk and tape datasets on the ACADemic NAS/8083 CPU is: **USER.IDnn.filename**

where: USER.	- must appear
IDnn	- is your User ID and must appear
.	- must appear
filename	- is one or more optional fields (each of which may not exceed 8 characters) separated by periods.

If you do not comply with the naming convention outlined above, your dataset(s) will be deleted from the disk(s) without warning. The following job will rename a disk file for you:

```
//IDIDname JOB (IDID,:05,1),'your name',PASSWORD=yourmvspassword
// EXEC IEHPROGM
```

```
  RENAME DSN=old.data.set.name,VOL=SYSDA=volumname,
          NEWNAME=USER.IDID.newname
```

(col. 16)

(col. 72)

Tape datasets that are catalogued will also be deleted if they do not follow the proper convention.

• FILE MANAGEMENT POLICY FOR OS/MVS DISKS

Beginning at the end of Spring semester, 1985, several changes were made to the way in which the academic disk volumes, ACAD00, ACAD01 and ACAD02 are managed. These changes are *very important* to users who have files on these disks.

ACAD01

The end of every semester is celebrated by the volume ACAD01 being *reformatted*. This means that *all* data and programs stored on this disk will be destroyed. Those of you who have data or programs stored on this disk that you wish to keep beyond the end of the semester should copy them onto tape. You can then restore your files to the disk at the beginning of the next semester. The volume ACAD01 is to be used *solely* for instruction by faculty and students in the College of Business. College of BUsiness faculty and graduate students who have data and programs used for research should copy their files to ACAD00. Faculty and students from other colleges should remove their files from ACAD01 as soon as possible. The procedure we use to reformat the disk volume will allow *no exceptions*. All files on the disk will be destroyed.

ACAD00 AND ACAD02

All files on the volumes ACAD00 and ACAD02 which have not been accessed for the previous 365 days are deleted at the end of *every* long semester and before each Fall semester. Users who have data and programs on these volumes that are infrequently accessed should copy these files to

A UTILITY PROGRAM TO MOVE DATA SETS

You may use the utility program MOVEDATA to move a sequential or partitioned data set from OS disk to tape, or from one OS disk to another. To access this program, type MENU in the *GO mode on MUSIC. Users with VSAM or ISAM data sets are responsible for writing the appropriate programs to move their files.

● PROCESSING TAPES ON THE NAS/8083

Tape processing on the NAS/8083 is accomplished through a tape management system (TMS), which provides users with protection against inadvertent loss of tape data and manages the many tapes in the Computing Center's tape library. In order for the TMS to be effective, it must control all the tapes that are being processed. To accomplish this, people who own tapes that they want to access must have them copied onto a tape controlled by the TMS. The only exception to this rule is if you want to access a foreign tape (a tape that doesn't belong to the TMS) "just one time." This might be the case if you want to copy files from a tape onto disk. In all other cases, you cannot access data contained on a tape unless it resides on a TMS volume. The OPER help file on MUSIC has a good overview of the Tape Management System here at NTSU. To read it, enter **HELP OPER** while logged-on to MUSIC and follow the instructions.

Following are some procedures to follow to process tapes on the NAS/8083:

CONDITION	ACTION
Copy Tape onto TMS	Bring tape and any documentation about it to the Computing Center Reception Area (ISB 119). Fill out the BLUE form for copying Foreign tapes onto the TMS. Deliver the form to Claudia Lynch.
Copy TMS volume to personal tape	Find out what the requirements are for tapes at the location you are planning to process your tape, if this is the reason you are copying the TMS volume. Bring your personal tape to the Computing Center Reception Area (ISB 119). Blank tapes may be purchased here, also. Fill out the GREEN form for copying TMS volumes onto Foreign Tapes. Deliver the form to Claudia Lynch.
Copy files from personal tape to disk	Bring your tape to the Computing Center high security area (GAB 5th floor - take the northeast staircase). Run your job (remembering to send a SURF message telling the operator to process your tape - enter SURF on MUSIC and follow the instructions). When you are through, and are sure your job worked, return to the high the high security area to pick up your tape.

NOTE: If you have a non-labeled tape and don't want to write dataset names, the Tape Librarian will assume it is O.K. with you to name your files FILE001 to FILE00N. The same dataset naming convention exists for tape datasets as that for disk datasets, so this might not be such a good idea.

The tape management system keeps track of what is going on with its tapes through the tape management catalog (TMC). The TMC is updated each time a tape is mounted and dismounted, and contains the following information:

- Volume Serial	- Record Format
- Blocksize	- Expiration Date
- Tape Density	- Dataset Name
- Logical Record Length	- Jobname/Stepname
	- Creating File

The TMS allows users to specify retention periods and expiration dates for their tapes (expiration dates are calculated, if a retention period is specified). The default retention period is *180 days*. Each file on a tape has an expiration date associated with it. If the tape is a copy of an outside (foreign) tape, all the datasets (files) on the tape will have the same expiration date. If the tape consists of files that have been added over time, each file will have a different expiration date. A TAPE WILL NOT EXPIRE, UNTIL ALL THE FILES ON IT HAVE EXPIRED!

While this may be a comforting thought for a few, do not be lulled into blissful abandon. Unless you are continually adding files to your tape, *it will expire* eventually, and then what will you do? An expired tape is AUTOMATICALLY returned to scratch tape status, ready to be written over at a moments notice. To keep on top of things, occasionally (once every couple of months or so), run the following job:

```
//JOB CARD -----A Valid job card
// EXEC TMSINFO
//SYSIN DD *
VOL=tapevolume -----Your TMS tape number
/*
```

This will inform you of the status of the various files on your tape(s). It should be noted that the expiration dates (EXPDT=) reported by this utility are specified as *Julian Dates*. The following table should aid you in deciphering the expiration date(s) of your file(s).

Should the need arise, the TMC can be updated online or through batch by authorized personnel. If, for example, you wanted to change the expiration date of a tape, this could be accomplished by an update to the TMC. To request an update of the TMC, submit a TMS Update Form (available from the Computing Center, ISB 119) to a member of the Academic Computing staff. The staff member will assist you in completing the TMS Update Form and will make arrangements with the Computer Operations Tape Librarian to process the TMS update request. Run the TMSINFO Utility (shown above) three days after submission of the form to verify that the update has taken place.

For more information on the Tape Management System, consult the OPER help file on MUSIC. To read it, enter **HELP OPER** while logged-on to MUSIC and follow the instructions.

Perpetual Julian Date Calendar (Non Leap Year*)

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	001	032	060	091	121	152	182	213	244	274	305	335
2	002	033	061	092	122	153	183	214	245	275	306	336
3	003	034	062	093	123	154	184	215	246	276	307	337
4	004	035	063	094	124	155	185	216	247	277	308	338
5	005	036	064	095	125	156	186	217	248	278	309	339
6	006	037	065	096	126	157	187	218	249	279	310	340
7	007	038	066	097	127	158	188	219	250	280	311	341
8	008	039	067	098	128	159	189	220	251	281	312	342
9	009	040	068	099	129	160	190	221	252	282	313	343
10	010	041	069	100	130	161	191	222	253	283	314	344
11	011	042	070	101	131	162	192	223	254	284	315	345
12	012	043	071	102	132	163	193	224	255	285	316	346
13	013	044	072	103	133	164	194	225	256	286	317	347
14	014	045	073	104	134	165	195	226	257	287	318	348
15	015	046	074	105	135	166	196	227	258	288	319	349
16	016	047	075	106	136	167	197	228	259	289	320	350
17	017	048	076	107	137	168	198	229	260	290	321	351
18	018	049	077	108	138	169	199	230	261	291	322	352
19	019	050	078	109	139	170	200	231	262	292	323	353
20	020	051	079	110	140	171	201	232	263	293	324	354
21	021	052	080	111	141	172	202	233	264	294	325	355
22	022	053	081	112	142	173	203	234	265	295	326	356
23	023	054	082	113	143	174	204	235	266	296	327	357
24	024	055	083	114	144	175	205	236	267	297	328	358
25	025	056	084	115	145	176	206	237	268	298	329	359
26	026	057	085	116	146	177	207	238	269	299	330	360
27	027	058	086	117	147	178	208	239	270	300	331	361
28	028	059	087	118	148	179	209	240	271	301	332	362
29	029		088	119	149	180	210	241	272	302	333	363
30	030		089	120	150	181	211	242	273	303	334	364
31	031		090		151	182	212	243		304		365

*For leap years (1988, 1992, 1996, etc.) add a day on February -060 - thus incrementing all the following dates by one.

• TURNAROUND ON THE LASER PRINTER

The Hewlett-Packard 2680A Laser Printer provides high quality computer-generated output with the flexibility of different character styles (fonts) and various character per inch settings. This printer serves users from the NAS/8083 the VAX Cluster. The Laser prints an average of over 5.5 million lines printed each week - more than ten times as much as any other Computing Center printers.

The HP-3000 system through which the Laser printer is accessed serves all users on a first-come, first-served basis. All jobs routed to the Laser go through the steps described below:

When you route a print job to 'REMOTE 4' or 'LASER' using MUSIC, the VAX, COM-LETE, or CMS, your job is placed on an output queue for Remote 4. At this point a MUSIC user in OSJR would receive information similar to the following:

JOB 299 ID32PRT OUTPUT READY - ROUTE 4 200 LINES

When your job is next in line to print, it is sent down a communications line from the mainframe to the HP-3000 system. Each half of the NAS/8083 has a communications line to the HP, so jobs spool to this system simultaneously from the ACAD and ADMN portions of the NAS/8083.

After a print job has been sent to the HP-3000 system via this communications line, the mainframe no longer has any record of the job. At this point, a MUSIC user would receive "JOB NOT FOUND" when querying OSJR for the status of his job. Keep in mind that at this point the job has NOT printed - it will be from 45 minutes up to several hours before it prints, depending on the volume and length of jobs already transferred to the HP-3000 system.

When your job is transferred to the HP-3000 it is placed on an output queue for the Laser printer. Jobs from both mainframes are placed on this queue in the order received - neither system has "priority". When your print job is first in line on this HP system queue, will be printed on the Laser.

The apparent delay for users of the Laser printer is caused by the number of jobs waiting to print on the HP system. Since this system receives output from multiple Host computers (the NAS/8083 and VAXcluster), it runs almost constantly during the day and night printing output as it is received. For a MUSIC user, a job may spool over to the HP system in five minutes or less. However, once transferred to the HP this job may be 125th in line, which means it will be at least an hour or more before it prints, depending on the size of the jobs preceding it.

To avoid waste of computer resources and needless increase of turnaround on the Laser, follow these guidelines:

Use the Laser printer only when you really need it - otherwise:

- Route output to REMOTE1 (BA) or REMOTE3 (ISB) if a Laser print font is not necessarily needed, and for "test runs" of class projects. (Turnaround is usually QUICKER at these remotes, also).
- Thoroughly proof read and test jobs before requesting copies.
- Abide by the limit of 4 copies printed by any method. Use copy machines or the Copy Centers for further copies.
- Allow enough waiting time before you go to the ISB to retrieve your Laser output - 45 minutes at the least. Toward the end of the semester (last 4 - 5 weeks) it usually takes several hours.
- Check the "LASER PRINTER STATUS" board kept in the ISB Output window for a current estimate of Laser turnaround time.

● TRANSFERRING CARD DATA TO MUSIC/SP

If you have a project which requires transferring data on IBM cards to your MUSIC account, you can run a job to do this without too much grief! In the past, you were required to punch *several* cards containing JCL (Job Control Language) statements which you would combine with your data cards for the transfer. Now, almost all of these cards have been punched for you and are kept in Room 110 in the Science and Technology Library (ISB).

The only card you need to punch yourself is the JOB card which identifies you to the system and sets some basic job parameters. The procedure to follow is fairly simple:

1. Go to Room 110 and ask for a set of cards to punch data to the MUSIC system.
2. Go to the card punch machine in the ISB building in the hall where printed output is retrieved.
3. Punch a JOB card to place on the top of your stack of cards. When you sit down at the machine, the power button will be at your right knee. Use the <REL> key to move cards through the machine. There should be two cards in place when you begin to type (only one card will actually be punched at a time). Use the <NUMERIC> key to punch numeric and "shifted" characters. Your JOB card *must* be just right for your job to work. Be sure to use your *batch* password on this card!
4. Place the JOB card on top, followed by all of the cards you received from 110 *except* the two cards with just %% and // on them. They will go below the cards containing your data.
5. Give the stack to the I/O operators to run your job.
6. After they have run the cards through the card reader, go to a terminal, sign-on to your account and type OSJR from the *GO mode. (The prompt in OSJR is ENTER REQUEST:)
7. You can check the status of your job by simply hitting the carriage return key <CR> at the prompt.
8. When your job has run (OUTPUT READY FOR MUSIC), type:

```
OUT J = "###",D=PUN,FILE = filename
```

^
!_ Job Number

^
!_ File name for new MUSIC file

9. The system will respond with "OUTPUT COPIED", and you may then enter END to exit OSJR and return to the *GO mode. Your data will be stored in the file you specified in the OUT command.

If you need help with the JCL or OSJR, consult the help desk staff in Room 110. If you need help with the card punch machine, talk with the receptionists in the Computing Center and they will refer you to someone who can help out.


```

* * * * *
*               *
*   MICROCOMPUTERS   *
*               *
* * * * *

```

SAS Available for PCs

If you have a University-owned IBM PC or compatible, you are eligible to receive a FREE copy of SAS. For further information contact Scott Barber at the Computing Center [565-2324] (AC10@NTSMUSIC).

Tips on Using Memory-Resident Programs

By Bob Brookshire, Manager of Academic Computing (AS03@NTSMUSIC)

There are several programs in use around campus of the "terminate and stay resident" variety. The most commonly used is Sidekick, a program which contains an editor, a calendar, a telephone dialer, an ASCII table, and a calculator, any or all of which can be accessed from within other programs. Programs of this sort are "installed" in memory and then remain dormant until they are invoked. When they are called, they interrupt the currently running program, allowing it to resume after you have checked your calendar or whatever.

Another program that remains resident in memory is CLM, which is part of the PCWS communications utility program that comes with MUSIC. This program is used prior to the TERM program to initialize the communications line on your personal computer. CLM stays resident so that you can interrupt your MUSIC session to return briefly to DOS (to get a directory listing or edit a file, for example).

There are other memory-resident utility programs available, some of which are even part of MS- and PC-DOS (e.g. the PRINT utility). Problems can arise, however, when using several of these programs at the same time.

The first problem is that as you install memory-resident programs, the memory they occupy is no longer available for other, non-memory-resident programs such as WordStar, Lotus 1-2-3, Multiplan, or Vterm. You can fill up all your memory with resident programs, leaving nothing available for your word processing, communications, or spreadsheet programs.

A second problem is that some of these memory-resident programs may interfere with each other or with other programs. They may attempt to occupy the same place in memory, or may intercept commands intended for another package.

These two problems may be at least partly overcome by watching carefully the order in which the resident programs are installed, and "uninstalling" the resident programs as necessary to free up memory or delete the incompatible program. Sidekick, for example, prefers to be installed last if there is more than one resident program. And, when freeing the memory these programs occupy for use by other programs, the resident programs must be uninstalled in exactly reverse order from the way in which they were installed.

If you want to use both PCWS and Sidekick, for example, you should run the CLM program first followed by SK, so that Sidekick is installed last. To uninstall the packages, enter Sidekick (using <CTRL><ALT>) and type <CTRL><HOME> followed by <CTRL><END>. This will release Sidekick. Then type CLM -X at the DOS prompt to release CLM.

If you had released CLM first, the memory it occupied would still be unuseable by other programs, because Sidekick is resident below it. Sidekick would, in a sense, block access to the unoccupied memory above it. You would not be able to use Sidekick, either. Typing <CTRL><ALT> to access Sidekick would reward you only with a "beep."

The moral of the story is that some care must be used with memory-resident programs, even those that appear innocent (like PRINT). If you do not install these programs properly, you may find them, or even your entire system, unusable.

A postscript: There is another area of incompatibility between Sidekick and PCWS. If you are using PCWS and Sidekick at the same time, you must exit Sidekick using <CTRL><ALT>, NOT the <ESC> key. If you use the <ESC> key, Sidekick does not return control of your keyboard to PCWS, and you will not be able to enter any PCWS or MUSIC commands.

Random Microcomputer Usage Notes

Compiled from PC Magazine

Under PC or MS-DOS 3.1, you can type in the time (when booting the system, or when prompted after you issue the TIME command) using a period to separate the hours and minutes, rather than a colon. For example, 9.5 is equivalent to 9:05. This will be welcome news for those of us who are not good touch typists, and have to hunt for the colon on the keyboard.

If you issue the command **COPY MYFILE MYFILE** MS- or PC-DOS will issue the message "File cannot be copied onto itself." If MYFILE is located in the root directory, however, and you issue the command **COPY MYFILE /MYFILE** DOS will NOT warn you, and will attempt to copy the file onto itself. This will truncate large files to only 64K (the size of DOS's copy buffer).

Problems . . .

Compiled From *The senTinel: The TIPC Publication for the Rest of Us*

A problem exists in the newest version of WordPerfect (Version 4.1) when used with the TI 855 printer. Seven of the characters available on the various font modules available for the 855 printer cannot be printed. The characters appear on the keyboard as: \ 1 ` ^ { }. Satellite Software International (SSI), the makers of WordPerfect are reportedly working on a fix for this.

Another problem with WordPerfect that may or may not be attracting a lot of attention at SSI is that of changing screen colors. It seems that if one tries to change colors the program "freaks out." The only way out is to delete the {WP}SYS.FIL and then re-install WordPerfect.

Here's another 855 printer problem from *The senTinel* (June 1986):

TIPC owners who also have the 855 printer often cannot do things that their word processing programs are supposed to be able to do—like double underlines, simple boxes and fancy borders. The culprit is ECS or more accurately, the absence of ECS.

ECS is an 855 printer option that few TI marketing people have ever heard of, even though it is mentioned briefly in the printer manual. It is the elusive, mysterious, expensive Extended Character Set.

The 855 fonts—and the font sets of other dot matrix printers—contain information to print all letters of the alphabet, all the commonly used symbols, and maybe a handful of uncommon symbols. What the 855 and many others don't have is information on simple boxes, borders, and other simple "graphics" that some word processors are capable of.

These characters are horizontal and vertical lines, double lines, patterned lines, and "corners".

The ECS option consists of three parts, all of which are needed: (1) the 4K buffer board, part #2232793-0002, \$90; (2) the 855 ECS ROM, part #2241538-0001, \$25; and (3) an 8K ECS set of two font modules, part #2241540-0001, \$60. Total \$175, TI prices. One cost-plus-10% dealer quotes \$145.

One font module contains foreign language characters, some Greek characters, and some math and scientific symbols. The other has the lines, corners, and so on. ECS comes in two formats, the IBM format with a default pitch of 12 and the TI format with a default pitch of 10. The characters on the two formats are nearly identical, with only a couple of differences.

Anyone who wants to learn more about ECS should try to get these two publications from TI: "Texas Instruments Microprinter Enhancements," DPY B018, and "Texas Instruments Font Modules," DPFM015.

Taking Advantage of Your Hidden Assets

According to Thor Firing, Santa Clara Valley TIPC Users Group (reported in *the senTinel*, June 1986), the "hidden disk drive" in your PC can really save you some time and heartache. He started to do some work on his PC one morning when he discovered that one of his floppy disk drives was broken. He did not have time to wait for it to be repaired, so he limped along using just one drive. Things were going fine until he wanted to copy a file from one disk to another. He could copy an entire disk by using the DISKCOPY command, but not one or two files. The following is Firing's account of his solution.

. . . reason displaced despair. There was a spare drive hidden in the machine, the RAMDISK! I had played with it when I first got my DOS 2, but I had never had any particular need for it.

I got out my manual, refreshed my memory of the required commands, and configured a RAMDISK. I copied to DRIVE G (the designation for the RAMDISK) the several files that I wanted to transfer to another disk, then copied them from Drive G to Drive B, containing the destination disk.

The day was saved. Now I can always count on my spare if a floppy drive should fail.

About That RAMDISK . . .

"Exactly what is a RAMDISK, anyway?" you may ask. *The senTinel* covered the topic very nicely in the same issue that Firing's RAMDISK anecdote was published. Following is their article.

RAMDISK is simply a section of the computer's random access memory (RAM) set aside to be used as if it were another disk drive. It is available in MS-DOS 2 or higher.

Setting up a RAMDISK is one of the easier things that can be done in DOS. All one needs to do is to enter the following general command into a CONFIG.SYS file: **DEVICE=[pathspec]RAMDISK.DEV [size]** *Pathspec* is the drive and directory where RAMDISK will be located. Not specifying a *pathspec* will put it into the root directory. *Size* specifies the total memory size in kilobytes and includes 4K that RAMDISK needs for overhead. The default, and minimum, size is 8K.

For example, the following line in CONFIG.SYS will install in the root directory a RAMDISK with 160K usable memory: **DEVICE=RAMDISK.DEV 164**

The drive designation for the first one is Drive G, a second one Drive H, and so on. (A through F are reserved for floppy and hard disk drives.)

Although RAMDISK can be used like any other disk drive, remember that it loses its stored data when the computer is turned off.

Software Review: ProComm

By Dave Molta, Technical Support Communications Group (SY11@NTSMUSIC)

In the last issue of *Benchmarks*, I reviewed Crosstalk, one of the leading commercial communications software programs for PCs. In that article, I indicated that I would review QModem, a popular shareware communications program, in this month's issue. Since that time, however, I have had a chance to spend some time with another shareware communications program called ProComm. While QModem is a popular, well developed product, I have found ProComm to be superior in many respects. A new version of QModem is scheduled to be released later this summer; I will review it in an upcoming issue of *BENCHMARKS*. This month, we'll look at Procomm V2.3.

Shareware: Try before you buy

For those of you who aren't familiar with the concept of Shareware (also known as Freeware), it is a marketing scheme developed to allow users to try software before they buy it. Shareware differs from public-domain software by virtue of the fact that Shareware is copyrighted. Documentation for the program is usually included on the diskette as an ASCII text file along with instructions for printing it on your printer. Users are encouraged to share the program with others and, if they find it useful, register with the program's authors by sending them a small fee (usually \$25-\$75) as compensation for their creative efforts. Registering usually entitles you to support, free updates, and, in some cases, a bound manual and a commission if anyone you gave the program to also registers it. The Shareware concept allows programmers to market their product without incurring the massive expenses normally associated with software publishing.

Most Shareware programs are relatively mature products whose features and quality often rival competing commercial products. Among the more popular shareware products are PC-Write, a full-featured word processor, PC-File, a database management program, PC-Calc, a spreadsheet program, and PC-Outline, a Thinktank-like outline generator. Look for reviews of these programs in future issues of *Benchmarks*. The Computing Center is planning to make these programs available on a computer bulletin board service which should be available some time during the fall semester. It should be noted that most shareware authors prohibit their product's use by businesses or government agencies without registration. Therefore, if you use a shareware program on a regular basis for state business, you should register with the program's authors by sending the appropriate fee. If demand warrants us doing so, the Computing Center will investigate site licensing options for popular programs so that costs may be minimized.

ProComm Product Description

ProComm was written by Bruce Barkelew and Tom Smith of Columbia, Missouri. The version reviewed here (V2.3) is a full-featured product that is extremely easy to use. Although the on-disk documentation (190K) is very good, the program's structure makes it possible to learn without reference to the manual. When ProComm is executed, the program goes immediately into terminal mode and the user is prompted to press ALT-F10 for help. Doing so results in the following pop-up help menu:

MAJOR FUNCTIONS

Dialing Directory Alt-D
Automatic Redial Alt-R
Keyboard Macros Alt-M
Modem Parameters Alt-P
Translate Table Alt-W
Editor Alt-A
Exit Alt-X
Host Mode Alt-Q
Chat Mode Alt-O
DOS Gateway Alt-F4
Command Files Alt-F5
Redisplay Alt-F6

UTILITY FUNCTIONS

Program Info Alt-I
Setup Screen Alt-S
Kermit Server Cmd Alt-K
Change Directory Alt-B
Clear Screen Alt-C
Toggle Duplex Alt-E
Hang Up Phone Alt-H
Elapsed Time Alt-T
Print On/Off Alt-L
Set Colors Alt-Z
Toggle CR-CR/LF Alt-F3
Break Key Alt-F7

FILE FUNCTIONS

Send files PgUp
Receive files PgDn
Directory Alt-F
View a File Alt-V
Screen Dump Alt-G
Log Toggle Alt-F1
Log Hold Alt-F2

Pressing any of these Alt-key combinations results in the appropriate menu being displayed on the screen. For example, pressing ALT-S will take you to the setup menu where you can configure ProComm for your modem, select the terminal you wish to emulate, and alter other parameters concerning file transfer, character translation, etc. The setup screen includes an option to save the selected parameters to disk, so once you've configured the program, these will be the default parameters every time you start the program. Pressing the <ESC> key returns you to terminal mode.

If you are communicating over the LAN, you would then want to press ALT-P to set the communications parameters (communications port, data bits, stop bits, and parity). Again, there is an option to save your selections to disk as default parameters. If you are communicating over phone lines using an autodial modem, pressing Alt-D will result in the dialing directory being displayed. This screen lists all computer systems (up to 100) the program is set up to communicate with, including their phone number and communications parameters. If you type the 2-digit number of the system you wish to contact, ProComm will dial the number and shift to terminal mode if the call is completed. If the number is busy, ProComm will offer to re-dial the number until a connection is made and sound an alarm when the connection is made. This feature is very handy if you are trying to connect to a popular bulletin board. If there are many entries in your dialing directory, ProComm can search for the name of the system you want to contact and then automatically dial it. All directory entries can be linked to command files (also known as script files) which can be set up to automatically log on to a remote system, perform some operation, log you off, and hang up the phone. ProComm also comes with a utility program which can be set up to dial a remote system late at night when long distance charges are lowest and automatically complete an interactive communications setting.

Once connected, ProComm is fast and quite easy to use. Most commands are implemented by use of ALT-key sequences, and if you forget a command, ALT-F10 will list them for you. ProComm includes a DOS gateway to temporarily exit to DOS while maintaining your communications session (to copy some files or format a new disk, for example). Typing EXIT from DOS returns you to ProComm. Another useful feature allows you to link ProComm with your favorite word processor so that, by typing ALT-A, WordStar (or your preferred word processor) appears on the screen. Exiting your word processor returns you to ProComm. This feature is invaluable if you perform file transfers on a regular basis.

Communications Parameters

The following communications parameters are supported by ProComm:

- | | |
|---------------------------------|-------------------------|
| * Communications ports 1 and 2 | * Full or Half Duplex |
| * Baud rates from 300 to 19,200 | * 7 or 8 data bits |
| * Even, odd, space & no parity | * 1 or 2 stop bits |
| * Auto & Non-auto line feed | * XON/XOFF Flow Control |
| * Line wrap | * Last line scrolling |

Note that Procomm does not handle parity properly, a common problem in PC communications software packages. The problem centers around the setting of the eighth character bit when communicating at 8 data bits, 1 stop bit, and no parity. If the eighth data bit is set high, as it appears to be in Procomm, the IBM extended character graphics are displayed on screen. This problem is further complicated by whether or not the host system ignores the eighth data bit. In order to communicate properly with the MUSIC, you must set Procomm for 7 data bits and even parity. To communicate with the VAX cluster, however, use 8 data bits and no parity. We expect this parity problem to be resolved in future releases of Procomm.

Terminal Features

The following is a list of terminal features included in ProComm:

- * DOS Gateway allows for temporary exit to DOS while maintaining communications session.
- * Programmable support for autodial modems (defaults to Hayes AT command sequences) including repeat dial until connected.
- * Auto-answer Host mode with password protection, file transfers, interactive chat, and DOS shell access.
- * Keyboard macros: ALT-0 to ALT-9 can be programmed with character strings up to 24 characters long including control codes.
- * Translation of incoming and outgoing characters.
- * Edit window allows temporary escape to any word processor.
- * Sound effects and exploding windows (!).

- * 100 number dialing directory with search and support for long-distance access codes.
- * Fully configurable display colors including snow suppression.
- * Logging of incoming data to disk or Printer.
- * Redisplay buffer allows for display of the last 4000 characters received using the cursor keys, PgUp, PgDn, End, and Home. Strings can also be searched for in the buffer.
- * File directories and subdirectories can be displayed on screen.
- * Text files can be listed from within the program. PgUp, PgDn, and Home can be used to move within the file.
- * Elapsed time since log on can be displayed as well as the current time and date.
- * Break key is supported for suspending programs.

Terminal Emulation

ProComm will emulate the following terminals:

- | | |
|------------------------|-------------------|
| * DEC VT-100 | * IBM 3101 |
| * Televideo 900 series | * DEC VT-52 |
| * Lear Siegler ADM 3/5 | * Heath/Zenith 19 |
| * ADDS Viewpoint | * Wyse 100 |
| * ANSI BBS | |

Full display attributes for VT-100 emulation are supported (double-high and double-wide characters are emulated in reverse video). 132-column mode is not supported. ANSI BBS is used to display color graphics when communicating with remote bulletin board systems (RBBS).

Data Transfer

The following ProComm features allow you to capture (download) text files from a host system to your PC:

- * Capture all incoming data to disk with or without terminal escape sequences.
- * Capture screen to diskette.

The following ProComm features allow you to transfer (upload) text files to a remote system:

- * Local echo of uploaded files (allows you to view your files as they are being transferred)
- * Expand blank lines to include a space (needed for systems that interpret a blank line as "end of text").
- * Prompted upload (ProComm waits for a specific character before sending each line—needed for uploading to MUSIC).
- * Character and line pacing (ProComm pauses after each character and/or line—needed on heavily loaded systems).

Protocol File Transfer

ProComm supports several file transfer protocols which allow you to transfer files utilizing an error-checking algorithm. This insures that the file you transfer to the remote system is an exact duplicate of the original. This feature is required for the transfer of binary program files. The following protocols are supported:

- * XModem (Widely used on bulletin boards and information utilities such as Compuserve and The Source).
- * Modem7 and YModem (These are variations of XModem which allow for the transfer of multiple files by executing one command).
- * Telink (Another XModem multiple file protocol used on Fido bulletin board systems).
- * Kermit (Widely used in academic and mainframe environments).

Host Mode Communications

ProComm can be configured to operate as a host computer for access from a remote location. This feature is quite useful if you need to access files on your PC from another PC. Once the program is shifted to host mode, the modem connected to it will answer incoming calls. ProComm will display a message once the modem answers and prompt the user for an ID and password. If the logon is successful, a programmable welcome message will be displayed followed by the host menu:

Files C)hat D)ownload U)pload S)hell G)oodbye

Callers make their choices by entering the first letter of an option. The F)iles option displays the files in the default directory, which can be changed through ALT-S, the setup screen. If the caller chooses C)hat, and alarm will sound on the host end for 30 seconds. If someone is present at the host system, a split-screen chat mode is enabled for interaction with the top 18 lines displaying incoming text and the bottom 4 lines displaying outgoing text. The D)ownload and U)pload options allow for file transfers to and from the host system using any of the protocols discussed earlier.

The S)hell command can be used to grant access to the host computer's operating system. All screen output is redirected to the communications port. Using this option, it is possible to run programs on the host system from a remote location. Note, however, that programs which write directly to the screen buffer (bypassing the system BIOS) cannot be run in this manner (this includes most commercial programs such as WordStar, Lotus, and Dbase). Note also that the S)hell command can be dangerous since a remote user could access your DOS and reformat your hard disk. A separate shell password can be enabled to protect against such an act.

The G)oodbye option logs the caller off. All commands issued by remote users are stored in an audit log, allowing you to monitor the system's use.

Command Files

Command files are text files you can create with an editor (such as WordStar in non-document mode) which contain ProComm commands. You can use command files to perform automatic logons, do unattended file transfers, as well as many other tasks. These command files can be automatically linked to entries in your dialing directory so that they are invoked when a specific system is called.

Virtually any ProComm command can be issued using command files, but limited provisions exist for conditional execution of commands based on responses from the remote system. Thus, ProComm's command files, while useful, are not as sophisticated as those offered in some commercial communications software programs (such as Microsoft Access and ASCOM IV).

Phone Support

The ProComm dialing directory includes the telephone number for PIL Systems' BBS for support of ProComm. While this BBS is extremely busy and therefore difficult to connect with, it is rewarding once you get there. Even users who have not paid for the product are granted limited access to the board, allowing them to read general message areas, provide comments to the authors, to see what new utilities, command files, etc. are available, and (of course) to register for ProComm.

According to the board, contributing users will receive additional time on the board, plus access to additional file and message areas, and other "goodies". These include the ability to download various help files and program files including a timed execution facility, a dialing directory sort routine, a file format for creating programs that use the ProComm dialing directory, PC-Mouse and MS Mouse drivers, ProComm command file generators, and sample command files for various BBSs and on-line services including RBBS boards, telex, Fido boards, and Multilink.

As with most "user-supported" software, assistance is offered to non-contributing users on the product, but they are not guaranteed support.

Conclusion

ProComm ranks among the best communications software programs available for the IBM PC and compatibles. It contains almost all of the features of commercial programs such as Crosstalk and supplements those features with an easy-to-use interface. ProComm is both fast and reliable, and aside from the parity problem noted earlier, appears to be free of major bugs. The fact that it is a shareware product allows students and others with a tight budget to get started with free software, and the \$25 registration fee is more than reasonable. ProComm is highly recommended. Hats off to Barkelew and Smith for sharing their programming skills with us.

A \$9.95 Spelling Checker ??

According to *The Times*, the newsletter of the Santa Clara Valley TIPC Users Group, there is a spelling checker available that sells for \$9.95. Called G-Spell, it works on IBM PCs and compatibles. It has a 90,000 word dictionary that can be customized and it proofs ASCII files. *The Times* computed the cost per word to be .1104 mils or about 1/10,000th of a dollar per word. You can get this bargain basement software by writing to:

Pico Publishing
P.O. Box 3266
Iowa City, IA 52244
(319) 354-8253

TIPC "Hacker's" Contest

The senTinel (June 1986) reports that Vinyard Software is sponsoring a contest to help TIPC programmers who are just starting out. You may submit any original program for the TIPC. It must be listable and you must agree to place it in the public domain. Top winner will get \$100. Second prize is \$75 worth of Vinyard software, and third prize is \$35 worth of Vinyard software. The top 25 programs will be published as a Vinyard Contest Pack.

According to Dr. Edward F. Mickolus, president of Vinyard, contest participants must be careful not to submit anything that contains copyrighted material. This includes well-known songs. Send your entries to Vinyard Software, 2243 Beacon Lane, Falls Church, VA 22043.

TI-Dent Computer Bulletin Board Update

The May issue of *Benchmarks* announced the formation of the TI-Dent bulletin board dedicated to TIPC users. Since that time, several things about the BBS have changed. Here is the latest info:

TI-Dent BBS:	565-1884
Cost:	Free
Hours of Operation:	24 hours a day, 7 days a week
Communications Parameters:	300/1200 and 2400 baud
	8 bit
	no parity
	1 stop bit
File Transfer Protocols:	ASCII, Xmodem, Xmodem CRC

According to the system operator, Charles Woods, the system also supports ANSI graphics and color. Following are excerpts from a letter we received from Mr. Woods.

The system is set up as a free BBS and new users are validated prior to full access to the board. File uploads are tested and checked by me before they are listed in the download area to prevent what is being called Trojan Horse programs from sneaking in.

I have listed in the BBS two of the finest examples of communications software available for the TIPC microcomputer, both are listed in the Public Domain under the ShareWare concept, and support color graphics.

Having personally used Computer Bulletin BOards for several years and finding the Denton area void of any of these services, I jumped in with both feet and expanded my system both hardware and software wise to add a small amount of variety to this area.

I encourage your students to use the BBS freely. Discussion areas may be added as required for the students to discuss problems or projects, and too, personal mail functions are available.

My current system configuration is:

TI Portable PC	External Color Monitor
768k RAM	Multifunction Board
3 Planes Graphics	2 21mb Miniscribe Winchester Drives
TI 855 Printer	2 360k floppy drives
2400Baud Courier	TI internal 300/1200 baud Modem

As part of my hobby, I enjoy helping new micro users in understanding telecommunications. My own personal areas of interest are LOTUS programming and applications software.

ECANET, a Bulletin Board for Training Professionals

ECANET is a free service aimed at those involved in computer-based training. It is operated by ECA, Inc., a training consulting firm. In order to maintain the professional nature of the BBS, registration is required to access files and other advanced areas. The bulletin, message, and comments sections, however, are open to anyone who signs on. The telephone number for ECANET is (818) 896-7450.

If you are interested in ECANET, you might be interested in submitting an article to them for electronic publication. It should be something that would be of interest to the training community, and have a length of between 500 and 2500 words. Three different methods of submission are acceptable:

- * Electronic Transfer - Upload your article to ECANET. This is the most preferable manner. To upload an article to ECANET, follow the directions on the help screens that can be read by typing a question mark when the ECANET FILE MENU is on your screen. Articles should be submitted in "plain vanilla" ASCII format (Wordstar's non-document mode, for example). If you are not familiar with ASCII format, send your article anyway and they will try to "translate" it.
- * Diskette Submission - Send your article to ECANET on an IBM PC compatible 5 1/4" diskette. Sent a well-packaged diskette, clearly marked DO NOT FOLD OR BEND on the outside, to ECANET, P.O. Box 1000, Arleta, CA 91331. Articles should be submitted in "plain vanilla" ASCII format.
- * Paper Submission - Send a printed copy of your article to the address above. This is the least preferred submission method and may result in some delay in publication.

ECA Inc. asks that you be sure and include your name, title, place of employment, and telephone number on all submissions, regardless of form. They will assume no responsibility for unsolicited materials and will copyright all materials that are published.

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Disk Backup Schedules**Backup Schedule for OS/MVS**

OS/MVS disk packs (academic and administrative) are backed up daily, Tuesday through Saturday, from 4-6:30 a.m., and Sunday from Midnight to 3 a.m. A backup of all the operating systems on the NAS CPU and their contents is done once every two weeks at some low activity period over a weekend.

MUSIC/SP Backup Hours

A message will be sent to all users signed on to MUSIC/SP approximately 10 minutes before backups are begun. It will be in the form ** MUSIC SHUT DOWN AT xxxx AM - SCHEDULED BACKUP **. To find out the backup hours while signed on to MUSIC/SP, enter HELP HOURS. The following backup schedule is currently in effect:

Tuesday	3 a.m. (for about 3 hours)	Weekly backup
Wednesday - Saturday	4 a.m. (for about 2 hours)	Daily backup
Saturday	Midnight (for about 2 hours)	Daily backup

PHOENIX Backup Schedule

PHOENIX is backed up weekly on Sunday night. The backup begins at midnight and lasts for approximately 30 minutes.

VAX Backup Schedule

Incremental backups of both VAX systems are performed Monday through Thursday at 4 p.m. Users do not have to log-off, but any files that are open at the time of the backup will NOT be backed up.

Full backups of both systems are done every Friday beginning at 8 a.m. These generally will take all day to complete. Again, users do not have to log-off, but any files that are open will not be backed up.

A "Stand Alone" backup of the system disk is done the third Tuesday of every month, in the afternoon, just before preventive maintenance. This procedure makes a copy of the system disk that can be used to restore its contents if the disk is completely destroyed. The system will be shut down; watch the system log-on message for specific times and dates.

NOTE: No backups are taken on the weekends. Requests for restoration of files should be made via MAIL to the username OPERATOR. Your file can only be restored if it existed before the last backup was done.

NAS/8083 Dual Processor Performance Statistics for June

CPU	SYSTEM	SCHEDULED OPERATING HOURS	PLANNED MAINT. HOURS	PLANNED PRODUCTION HOURS	UNPLANNED MAINT. HOURS	PRODUCTION HOURS ACHIEVED	SYSTEM UPTIME
ACAD	VM/SP3	720	4.62	715.38	3.32	712.06	99.5%
ACAD	MUSIC/SP	720	29.79	690.21	5.40	684.81	99.2%
ACAD	MVS/JES2	720	4.87	715.13	12.39	702.74	98.3%
ACAD	COMPLETA	720	5.17	714.83	14.25	700.58	98.0%
ADMN	MVS/JES2	720	7.89	712.11	5.06	707.05	99.3%
ADMN	COMPLETEA	268	0.00	268.00	1.90	266.10	99.3%
ADMN	ADABASA	720	22.72	697.28	15.89	681.39	97.7%

System Uptime = (Production Hrs. Achieved)/(Planned Production Hrs.)

Production Hrs. Achieved = (Planned Production)-(Unplanned Maint.)

Scheduled Operating Hrs. = (Planned Maint.) + (Planned Production)

MUSIC/SP Planned Maintenance Hours include 15.39 hours for system backup and 9.57 hours for VM/SP3 system backup.

ADABASA'S Planned Maintenance Hours include 13.93 Hrs. for system backup.

The ACAD CPU achieved 100% uptime. The NAS/7360 DASD achieved 100% uptime. The NAS/7350 DASD achieved 100% uptime. The ADMN CPU achieved 99.8% uptime. The STC 8650 DASD achieved 100% uptime. The NAS/7380 DASD achieved 100% uptime.

Lost productivity is calculated as the greatest amount of elapsed time that any one of the production systems was unavailable for scheduled operation. Lost productivity hours were contributed to by the following key causes:

ACAD CPU:

CPU, Tape, and Disk Subsystems (NAS)

1. ACADEMIC Computing System shut down to organize I/O channels on the NAS/8083 dual processor

5.92 HOURS

Miscellaneous

1. Undetermined causes for system restarts
2. JES2 program loops caused by error in the \$DN command routine.
3. The UPS auxiliary power system failed to return to operation after a power disruption
4. MVS/JES2 system tuning/improvements
5. ACADEMIC Computing System shut down while rearranging Communications Area in GAB

2.84

7.75

3.43

1.54

1.25

TOTAL 16.81 HOURS

GRAND TOTAL FOR ACAD 20.73 HOURS

ADMN CPU:

CPU, Tape, and Disk Subsystems (NAS)

1. ADMIN Computing System shut down to install additional NAS/7380 DASD and to organize I/O Channels on the NAS/8083 Dual Processor.
2. Control Storage buffer failures in CPU.

7.35 HOURS

1.12

TOTAL 8.47 HOURS

ISB Input/Output Station (CIS TECH)

1. IBM 3203 Impact Printer installation

0.52 HOURS

Miscellaneous

1. Undetermined Causes for System Restarts
2. ADMIN Computing System disruptions while rearranging Communications Area in GAB.
3. The UPS auxiliary power system failed to return to operation after a power disruption.
4. MVS/JES2 system tuning/improvements
5. ADABASA shut down to process single jobs
6. ADABASA shut down while reorganizing disk data sets for the new NAS/7380 DASD.

0.93 HOURS

0.92

2.63

3.33

4.18

4.55

TOTAL 16.54 HOURS

GRAND TOTAL FOR ADMN 25.53 HOURS

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*               *
*   TECHNICAL   *
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Academic (NAS) Program Hit Parade

The following programs were used the most frequently on the Academic portion of the NAS/8083 during June.

JUNE TOP TEN PROGRAMS IN TERMS OF FREQUENCY OF RUNS

Program	Description	Number of Runs	Percent of Total
1. OTHER	Programs not Categorized	7284	15.1
2. IEWL	Linkage Editor	7135	14.8
3. PGM=*.DD	Compiled Program	7066	14.6
4. IEBGENER	IBM Utility	4852	10.1
5. SCRIPT	Waterloo/SCRIPT	4832	10.0
6. SASLPA	SAS	4341	9.0
7. PTPCH	Dataset Lister	2841	5.9
8. IEYFORT	FORTRAN G	2032	4.2
9. EIL0AA	PL/I Optimizer	1678	3.5
10. IKFCBL00	VS COBOL Compiler	1634	3.4

JUNE TOP TEN PROGRAMS IN TERMS OF CPU SECONDS USED

Program	Description	CPU Seconds	Percent of Total
1. SASLPA	SAS	48707	49.4
2. OTHER	Programs not Categorized	18918	19.2
3. SCRIPT	Waterloo/SCRIPT	11331	11.5
4. PGM=*.DD	Compiled Program	7709	7.8
5. PTPCH	Dataset Lister	3270	3.3
6. IFOX00	System Assembler	1884	1.9
7. IEWL	Linkage Editor	1714	1.7
8. IKFCBL00	VS COBOL Compiler	1196	1.2
9. IEL0AA	PL/I Optimizer	1012	1.0
10. IEBGENER	IBM Utility	793	0.8

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*   I N F O R M A T I O N   *
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Information Systems News

By Coy Hoggard, Manager of Information Systems

Registration for Summer I semester was (as usual) a major event for the Information Systems group. We were especially pleased with the significantly improved computer response time experienced in registration, and we want to express our thanks to everyone who was involved (either directly or indirectly) with the procurement and installation of the faster CPU and disk drives, as well as required modifications to the operating system and other support software.

Work is continuing on the joint NTSU/TCOM payroll/personnel system project (known as "HRMIS" - for "Human Resources Management Information System"). Initial testing of the vendor-supplied software identified several problems. Vendor has been notified and negotiations are underway regarding resolution of those problems.

Work is underway to get NTSU and TCOM onto a common (software) accounting system. This will require modifications to each institution's existing system. The two institutions used different copies of the same basic system at one time, but significant modifications have been made over the years as a result of differing operational philosophies. With the move toward establishing closer ties between NTSU and TCOM, use of common systems where possible is a desirable goal. This will simplify maintenance overall, and, in the case of the accounting system, will give TCOM the benefit of enhancements that have been made to the NTSU system but that were not, at the time, perceived by TCOM as being necessary.

Personnel Actions

1. Robin Braden joined our group effective June 10. Robin filled the position of Data Control Assistant for the Fiscal Systems Team. This position was vacated when Janet Harmon was promoted into a programming position. Robin is a native of Missouri, and attended St. Louis Community College at Meramec, where she earned a certificate of proficiency in Computer Science. Robin's prior experience includes work as a secretary/office administrator for a CPA, as well as applications programming experience. She and her husband, Jeff, currently live in Gainesville.
2. Trina Knight filled the position of Data Control Assistant for the General Systems Team, effective June 16. This position was previously held by Laura Massey, who was promoted into a programming position in the General Systems Team. Trina transferred from the Data Entry section, where she has been a Data Entry Operator for almost three years. She is a native of Sanger, where she currently lives, along with her husband, Steve, and 14-month old son, Brandon.

- COMPUTER
HUMOR

Today's comedy comes in many mediums. *Benchmarks* readers have become familiar with the electronic humor magazine *NutWorks*, which is available on the NAS mainframe through BITNET. *Software News* reports a couple of other sources for computer type humor. There is a monthly newsletter called *Comedy by Wire*, which costs \$9 a year and, for those of you who just can't leave your PC, there is *Chuckie Pops*. *Chuckie Pops* is diskette-based humor for IBM or compatible machines. It's priced to sell at just \$14.95. Send your money to:

[For *Comedy by Wire*]
 Billiam Coronel
 431 West 45th St.
 New York, NY 10036

Get a "Subscription" to *Benchmarks*

Benchmarks is a vital link between the NTSU Computing Center and the users of our facilities. It is important for all users of the computing facilities to maintain a file of these newsletters because they contain materials which will periodically update existing documents as well as information and suggestions on uses of OS/MVS, MUSIC/SP, the VAX Cluster, Microcomputers, and other resources available to NTSU students and faculty. To facilitate the dispersal of *Benchmarks*, *** **FREE** *** subscriptions are available. To receive yours, send the following information to us either by "snail mail" (the post office or campus mail) or electronically, through the MEMO facility on MUSIC/SP to AS04.

Name _____

Mailing Address _____

Name _____

Mailing Address _____

PLEASE GIVE A CAMPUS ADDRESS (NOT BOX) IF POSSIBLE! - It's Cheaper !!

Academic Computing Services
The Computing Center
NT Box 13495
North Texas State University
Denton, TX 76203

Registration Form for Computing Center Short Courses

Please complete this form and return it AS SOON AS POSSIBLE if you wish to attend any of the short courses listed below. You may also register over the phone by calling 565-2324.

NAME: _____ PHONE: _____

DEPT: _____ CLASSIFICATION: _____

I wish to attend:

• Introduction to MUSIC/SP:

- _____ Monday, September 15: 1-3 p.m. (ISB 110)
- _____ Tuesday, September 16: 6-8 p.m. (ISB 110)
- _____ Saturday, September 20: 9-11 a.m. (ISB 110)
- _____ Saturday, October 18: 9-11 a.m. (ISB 110)
- _____ Wednesday, October 22: 6-8 p.m. (ISB 110)
- _____ Thursday, October 23: 1-3 p.m. (ISB 110)

• System Files in SAS & SPSS-X:

- _____ Wednesday, September 24: 3-5 p.m. (Graphics Lab, ISB)
- _____ Monday, October 27: 9-11 a.m. (Graphics Lab, ISB)

• VAX Utilities & Commands:

- _____ Tuesday, September 16: 9 a.m.-Noon (ISB 110)
- _____ Monday, October 20: 6-9 p.m. (ISB 110)

• Introduction to SAS:

- _____ Wednesday, September 17: 2-4 p.m. (ISB 110)
- _____ Monday, October 20: 1-3 p.m. (ISB 110)

• Using MUSIC/SP Utilities:

- _____ Thursday, September 25: 3-5 p.m. (ISB 110)
- _____ Saturday, October 25: 9-11 a.m. (ISB 110)

• Introduction to SPSS-X:

- _____ Tuesday, September 23: 1-3 p.m. (ISB 110)
- _____ Wednesday, October 29: 9-11 a.m. (ISB 110)

• Introduction to IBM JCL:

- _____ Thursday, September 25: 3-5 p.m. (Graphics Lab, ISB)
- _____ Monday, October 28: 9-11 a.m. (Graphics Lab, ISB)

• Introduction to CMS:

- _____ Friday, September 19: 1-3 p.m. (ISB 110)
- _____ Friday, October 24: 1-3 p.m. (ISB 110)

• Introduction to SAS/GRAPH:

- _____ Monday, September 22: 1-3 p.m. (Graphics Lab, ISB)
- _____ Monday, October 27: 1-3 p.m. (Graphics Lab, ISB)

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